

Remarks

The amendments resolve the claim objections and 112 issues. As to the 112 rejection in section 17 of the office action regarding the use of the term “about”, the applicant believes that this term is sufficiently definite for one of skill in the field, as this term is used in claims and the specification of prior art patents in the field. See, for example, patent 5884226 claim 1 lines 4 and 11, and patent 5315513 column 3 line 53. Obviously, the term “about” is commonly used in patent claims, and as it is used in directly relevant prior art, it is proper in this case.

As to the provisional double patenting rejection, the applicant thanks the examiner for this information at this early stage. The applicant expects to amend the claims of application 11/398,696 at an appropriate time, and expects that such will resolve the issue.

The Examiner rejected all of the claims under 35 U.S.C. §101. The independent claims have been amended into clearly statutory “computer-readable medium”-type claims. The claims as amended clearly meet the requirements of 35 U.S.C. §101. Although the present specification does not explicitly describe computer-readable media, the application clearly contemplates computation (see claim 1 in the published application, for example). Computation takes place using a computer. More direct support for these amendments is found in the well-known prior art. For example, the patent for MODTRAN4 (described in the background of the present application) is 5884226. This ‘226 patent shows in Fig. 5, and describes in column 12, a system which uses MODTRAN4, and includes a computer that calculates transmittance and radiance values. An even earlier version of MODTRAN is described in patent 5315513, and includes the same drawing. Column 5 lines 8-60 describe MODTRAN as code resident on a computer that runs certain calculations.

MPEP 2163 (at page 2100-173) recites controlling Federal Circuit law that establishes that what is well known to one of ordinary skill in the art need not be disclosed in detail in a patent application. The computer-readable medium falls into this category, as the earlier published patents for MODTRAN clearly describe such. Accordingly, there is sufficient support for the amendments.

The examiner requested a brief summary of the differences between MODTRAN4 (the prior art) and the invention. MODTRAN4 is a moderate or broader (coarser) spectral resolution radiative transport (RT) model, having a resolution of  $2\text{ cm}^{-1}$ . MODTRAN4 has been used extensively in the design and analysis of broadband, multiband, and short-wave IR/visible hyperspectral imaging sensors. However, conventional interferometers and many state-of-the-art sensors working in the long- and mid-wave IR operate at higher spectral resolution than MODTRAN4 provides. The invention accomplishes a spectral resolution of  $1\text{ cm}^{-1}$  or less, which meets the computation requirements for such higher spectral resolution sensors.

Narrowing the band model spectral resolution in this manner changes the fundamental character of the band model. At the finer spectral resolution accomplished by the invention, a much larger fraction of any atomic or molecular line falls outside of the spectral bin containing the line. The inventive band model thus accomplishes improved treatment of both line tail and line center absorption: line tail absorption is modeled closer to line centers (as defined by a compilation of spectroscopic data), and the finite-bin single-line equivalent width used to calculate line center absorption is no longer simply a small perturbation of the total single line equivalent width.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned in Westborough, Massachusetts, (508) 898-1501.

Respectfully submitted,



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